WASHINGTON DEPARTMENT OF ECOLOGY

ENVIRONMENTAL ASSESSMENT PROGRAM

FRESHWATER MONITORING UNIT

STREAM DISCHARGE TECHNICAL NOTES

STATION ID: 03J100

STATION NAME: Hansen Creek near Sedro Woolley

WATER YEAR: 2006

AUTHOR: Don Watt

Introduction

Watershed Description

The Hansen Creek drainage stretches from the southwest side of Lyman Hill south to the Skagit River just east of Sedro-Woolley. The watershed encompasses steep forested and logged slopes reaching elevations above 3600 feet; and drops abruptly to the Skagit Valley lowlands with the elevation less than 100 feet at the gage.

Gage Location

The gage is located near R.M. 4.0 on Hansen Creek, on Skagit County property at the Northern State Recreation Area. The Primary Gage Index is a staff gage mounted near the right bank of the creek at the base of a large tree about 15 feet downstream from the Thompson Drive Bridge. The gage house is located on the left bank, at roughly the same elevation as the roadway.

Table 1.

Drainage Area (square miles)	10
Latitude (degrees, minutes, seconds)	48, 31, 50 N.
Longitude (degrees, minutes, seconds)	122, 12, 02 W.

Discharge

Table 2. Discharge Statistics.

Annual Mean Discharge (cfs)	16
Annual Median Discharge (cfs)	15
Maximum Daily Mean Discharge (cfs)	75
Minimum Daily Mean Discharge (cfs)	2.7
Maximum Instantaneous Discharge (cfs)	89
Minimum Instantaneous Discharge (cfs)	2.5
Discharge Equaled or Exceeded 10 % of Recorded Time (cfs)	42
Discharge Equaled or Exceeded 90 % of Recorded Time (cfs)	3.3
Number of Days Discharge is Greater Than Range of Ratings	33
Number of Days Discharge is Less Than Range of Ratings	0

Note: Statistics displayed in Table 2 may not include values in which the predicted discharge exceeds the range of ratings.

Narrative

Error Analysis

Table 3. Error Analysis Summary.

Logger Drift Error (% of discharge)	
Weighted Rating Error (% of discharge)	11%
Total Potential Error (% of discharge)	

Rating Table(s)

Table 4. Rating Table Summary

Rating Table No.	101	3	102	301
Period of Ratings	10/1 to 10/25	10/25 to 2/8	2/8 to 4/2	4/2 to 7/11
Range of Ratings (cfs)	1.5 to 83 cfs	2.2 to 132 cfs	1.5 to 83 cfs	2.2 to 132 cfs
No. of Defining Measurements	4	8	4	8
Rating Error (%)	8%	12%	8%	12%

Rating Table No.	4			
Period of Ratings	7/11 thru 9/30			
Range of Ratings (cfs)	2.1 to 132 cfs			
No. of Defining Measurements	8			
Rating Error (%)	12%			

Narrative

Tables 101 and 102 accounted for 95 days or 26% of WY2006. Tables 3 and 301 covered 158 days or 43% of WY2006. Table 4 accounted for 112 days or 31% of the water year.

Stage Record

Table 5. Stage Record Summary

Minimum Recorded Stage (feet)	4.51
Maximum Recorded Stage (feet)	7.57
Range of Recorded Stage (feet)	3.06
Number of Un-Reported Days	33
Number of Days Qualified as Estimates	33
Number of Days Qualified as Unreliable Estimates	0

Narrative

The 33 unreported days were the result of gage height readings above the range of the ratings. There were no unreported days due to readings below the range of ratings. Most of the 33 days qualified as estimates were a result of data gaps being filled.

Modeled Discharge

Table 6. Model Summary

Model Type (Slope conveyance, other, none)	none
Range of Modeled Stage (feet)	
Range of Modeled Discharge (cfs)	
Valid Period for Model	
Model Confidence	

Surveys

Table 7. Survey Type and Date (station, cross section, longitudinal)

Type	Date

Activities Completed

On 8/23/2006 a bubble chamber was installed and slant pipe was lowered to improve gage performance.